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**PROCESS FOR FORMING TUBE-SHAPED HOLLOW BODIES MADE
OF METAL**

The invention concerns a process for forming tube-shaped hollow bodies made of metal according to the generic portion of patent claim 1.

Forming tube-shaped hollow bodies made out of metal by soft annealing the hollow body, further processing it depending on the requirements of the final shape sought, and finally hydroforming it in a die through a medium introduced into the hollow body is known.

Because the material solidifies during hydroforming as the forming progresses, and therefore resists further shaping or even cracks, in practice, changes of only up to approximately 10 % of the cross-section relative to the initial cross-section are possible during one cycle of hydroforming.

The object of the invention is to allow greater alterations of the cross-section.

This object is achieved in a process according to the generic portion of claim 1 by the features of this claim.

Further developments and advantageous embodiments arise from the sub-claims.

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Through the upstream processing phase, the tube-shaped hollow body can already be impressed with a temporary cross-sectional shape which tends towards the final cross-sectional shape. In this way, the maximum forming length is again made available for hydroforming by the subsequent soft annealing. Therefore, during the final hydroforming, a final cross-sectional shape, which is relative to the original cross-sectional form of the tube-shaped hollow body after straight seam welding significantly greater than the maximum values achievable until now, can be achieved.

According to a further development, the processing phases of mechanical partial expansion and/or mechanical partial reduction and subsequent soft annealing can be performed multiple times in sequence. In this way, even greater forming lengths can be achieved.

In addition, the tube-shaped hollow body can also be soft annealed before the upstream processing phase. In this way, hardening due to the shaping process into a closed tube is also eliminated and a high forming reserve for the upstream processing phase is achieved.

The partial expansion and/or reduction of the tube-shaped hollow body can be performed at those locations at which the largest alteration of the cross-section after hydroforming relative to the initial cross-section occurs.

For this purpose, the expanded hollow body 10' according to c) is placed in the die 14, whose internal cavity represents the future external dimensions of the hollow body 10'.

